

1           1.       In a network of stations, a method of access contention by a station having a  
2 frame to be transmitted comprises:  
3           detecting contention control information for a contention period; and  
4           determining from the contention control information if the station is permitted to  
5 contend for access to a transmission medium to which the stations are connected during the  
6 contention period.

1           2.       The method of claim 1, wherein determining comprises:  
2           determining if the contention control information indicates a contention-free access;  
3 and  
4           if the contention control information indicates a contention-free access, determining if  
5 a channel access priority level associated with the frame to be transmitted is higher than a  
6 channel access priority level associated with a last transmitted frame.

1           3.       The method of claim 2, further comprising:  
2           if the contention control information indicates a contention-free status and the  
3 channel access priority level associated with the frame to be transmitted is determined to be  
4 higher than the channel access priority level of the last transmitted frame, or the contention  
5 control information does not indicate a contention-free status, detecting whether any station  
6 in the network of stations intends to contend for access to the medium at a channel access  
7 priority level that is higher than the channel access priority level associated with the frame to  
8 be transmitted.

1           4.       The method of claim 3, further comprising:  
2           deferring contention for access to the transmission medium to any such station  
3 intending to contend for access at the higher channel access priority level.

1           5.       The method of claim 3, further comprising:  
2           contending for access to the medium during the next contention period if no higher  
3 channel access priority level is detected.

1           6.     The method of claim 5, further comprising:  
2           signaling an intention to contend at the associated channel access priority level to  
3     other stations prior to the contention period.

1           7.     The method of claim 6, wherein contending comprises:  
2           establishing a delay period corresponding to a random backoff time; and  
3           monitoring the transmission medium for activity for the duration of the delay period.

1           8.     The method of claim 7, further comprising:  
2           transmitting the frame if activity is not detected during the monitoring.

1           9.     The method of claim 3, wherein detecting whether any station in the network  
2     of stations intends to contend for access to the medium at a channel access priority level that  
3     is higher than the channel access priority level associated with the frame to be transmitted  
4     occurs in a priority resolution period immediately prior to the contention period and wherein  
5     detecting whether any station in the network of stations intends to contend for access to the  
6     medium at a channel access priority level that is higher than the channel access priority level  
7     associated with the frame to be transmitted comprises:

8           detecting signaling from at least one other station during the priority resolution  
9     period, the detected signaling indicating a channel access priority level of a frame to be  
10    transmitted by the at least one other the station.

1           10.    The method of claim 9, wherein the priority resolution period includes n  
2     priority resolution slots and supports  $2^n$  channel access priority levels.

1           11.    The method of claim 10, wherein  $n=2$  and each channel access priority level is  
2     represented as a two-bit binary value.

1           12.    The method of claim 11, wherein the two priority resolution slots include a  
2     first priority resolution slot corresponding to a first bit in the two-bit binary value and a

second priority resolution slot corresponding to a second bit in the two-bit binary value, and wherein a binary one in the two-bit binary value is received in the detected signaling in a corresponding one of the two priority resolution slots.

13. The method of claim 12, further comprising:  
signaling in the priority resolution slots the channel access priority level associated with the frame to be transmitted.

14. The method of claim 13, wherein signaling comprises:  
signaling in the first priority resolution slot when the associated channel access priority level requires that the first bit in the two-bit binary value be a one; and  
signaling in the second priority resolution slot when the associated channel access priority level requires that the second bit in the two-bit binary value be one in the event that the first bit is a one or signaling from no other station was detected in the first priority resolution slot.

15. The method of claim 9, further comprising:  
maintaining a virtual carrier sense timer for projecting when the priority resolution period begins relative to the last transmitted frame.

16. The method of claim 15, wherein the last transmitted frame includes frame control information, and wherein maintaining comprises:  
using the frame control information to provide a value to the virtual carrier sense timer.

17. The method of claim 16, further comprising:  
using a physical carrier sense to determine when the priority resolution period begins relative to the last transmitted frame.

18. The method of claim 2, wherein the contention control information and the channel access priority level are observable by substantially all of the stations.

1           19.     The method of claim 1, wherein the contention control information is a flag  
2     that, when set, indicates contention-free status.

1           20.     The method of claim 1, wherein the transmission medium is a power line.

1           21.     The method of claim 13, wherein signaling comprises transmitting OFDM  
2     symbols and wherein detecting signaling comprises detecting transmitted OFDM symbols,  
3     the OFDM symbols being observable by substantially all of the stations because of delay  
4     spread performance characteristics associated with the OFDM symbols.

1           22.     The method of claim 9, wherein the priority resolution period follows a period  
2     of transmission medium inactivity.

1           23.     In a network of stations interconnected by a transmission medium, a media  
2     access control unit at each station for control access to the transmission medium, the media  
3     access control unit comprising:

4                 a unit to detect contention control information for a contention period; and  
5     a unit to determine from the contention control information if the station is permitted to  
6     contend for access during the contention period.

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